

PATENT SPECIFICATION

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DRAWINGS ATTACHED

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(54) IMPROVEMENTS IN AND RELATING TO THE PRODUCTION OF SOLID FUELS

- (71) We, THERMCO (KING'S LYNN) LIMITED, a Body Corporate duly organised under the Laws of Great Britain, of 18 King Street, King's Lynn, Norfolk, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—
- 10 This invention relates to the production of commercial and household solid fuels from household waste, raw refuse and other waste materials.
- The object of the present invention is to provide a mechanical handling and processing plant for the physical treatment of refuse and other waste materials and its mixture with additives, by the utilisation of which satisfactory fuels can be economically produced.
- 20 According to the present invention there is provided a method of producing commercial and household solid fuel from raw refuse and other waste material consisting in removing metals and fines, crushing and drying the treated waste or refuse and mixing it with a proportion of pulverised coal or coke to enrich the calorific value together with a bonding agent before being pelletised or briquetted and finally heat-treated at a temperature of less than 225° C. to form a substantially smokeless fuel.
- The proportions by weight of a typical mixture are 68% physically treated refuse, the largest pieces of which are 3/4" and the smallest 1/4", 24% of pulverised anthracite to serve as calorific enricher, and 8% of standard TOTANIN (Registered Trade Mark) as bonding agent, this being the Lignite Sulphonate sold by Norsk Hydro (U.K.) Limited.
- 40 Without heat treatment the smoke emanation of the mixture on combustion is unacceptable for use in smokeless zones but after treatment at circa 200° C. for from one to three hours a substantial proportion of the volatile smoke producing constituents is driven off, leaving a fuel which when burnt according to B.S. 3841.1965 gives a result not exceeding 5 gm. smoke per hour.
- The temperature of the heat treatment is critical, it having been found that fuel produced from the mixture aforementioned when heat treated in air at a temperature substantially above 200° C. is liable to spontaneous combustion and the heat treatment temperature should always be less than 225° C.
- 55 The accompanying drawing shows schematically a typical plant for producing fuel according to the invention and comprises—
1. Crude refuse reception hopper with feeder and fines remover,
 2. Primary crusher and feeder with fines remover,
 3. Belt with metal extractor,
 4. Secondary crusher or pulveriser,
 5. Belt with metal extractor,
 6. Scalping screen with oversize and fines removal,
 7. Storage accumulator and feeder,
 8. Calorific enricher feeder, bonder feeder and mixer,
 9. Pelletiser,
 10. Volatile extractor oven and cooler,
 11. Bulk storage hoppers for product,
 12. Oversize waste and volatile incinerator.
- M—Metals removal.
 F—Fines removal.
- The fuel obtained has a calorific value in the range of 8,800 to 11,000 B.Th.U's per pound and is mechanically stronger and more water resistant than conventional smokeless fuels.
- By the present invention arrangements for the physical treatment of refuse and its mixture with additives are provided by the utilisation of which satisfactory fuels can be economically and continually produced.

WHAT WE CLAIM IS:—

1. A method of producing commercial and household solid fuel from raw refuse and other waste material consisting in removing
5 metals and fines, crushing and drying the treated waste or refuse and mixing it with a proportion of pulverised coal or coke to enrich the calorific value together with a bonding agent before being pelletised or
10 briquetted and finally heat treated at a temperature of less than 225° C. to form a substantially smokeless fuel.

2. A method of producing solid fuel according to the preceding Claim 1, wherein the
15 fuel comprises, by weight, some 68% physically treated refuse, the largest pieces of which

are 3/4" and the smallest 1/4", 24% of pulverised coal or coke to serve as calorific enricher, and 8% of lignite sulphonate as bonding agent.

3. A method of producing solid fuel substantially as described.

4. Apparatus for producing solid fuel substantially as described with reference to the accompanying drawing.

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COMPLETE SPECIFICATION

1 SHEET

*This drawing is a reproduction of
the Original on a reduced scale*

